

# Rhodora

JOURNAL OF THE  
NEW ENGLAND BOTANICAL CLUB

Conducted and published for the Club, by

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Vol. 54

June, 1952

No. 642

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The New England Botanical Club, Inc.

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Botanical Museum, Oxford St., Cambridge 38, Mass.

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**RHODORA.**—A monthly journal of botany, devoted primarily to the flora of the Gray's Manual Range and regions floristically related. Price, \$4.00 per year, net, postpaid, in funds payable at par in United States currency in Boston; single copies (if available) of not more than 24 pages and with 1 plate, 40 cents, numbers of more than 24 pages or with more than 1 plate mostly at higher prices (see 3rd cover-page). Back volumes can be supplied at \$4.00. Some single numbers from these volumes can be supplied only at advanced prices (see 3rd cover-page). Somewhat reduced rates for complete sets can be obtained on application to Dr. Hill. Notes and short scientific papers, relating directly or indirectly to the plants of North America, will be considered for publication to the extent that the limited space of the journal permits. Illustrations can be used only if the cost of engraver's blocks is met through the author or his institution. Forms may be closed five weeks in advance of publication. Authors (of more than two pages of print) will receive 15 copies of the issue in which their contributions appear, if they request them when returning proof. Extracted reprints, if ordered in advance, will be furnished at cost.

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Dr. A. F. Hill, 8 W. King St., Lancaster, Pa., or, preferably, Botanical Museum, Oxford St., Cambridge 38, Mass.

Entered as second-class matter March 9, 1929, at the post office at Lancaster, Pa., under the Act of March 3, 1879.

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## PHIPPSIA ALGIDA IN THE UNITED STATES

WILLIAM A. WEBER

THE Central Rocky Mountains of Colorado occupy a focal position in studies of post-Pleistocene plant geography because they provide a residual Pleistocene environment of considerable area suitable for the maintenance of a number of plants primarily arctic and subarctic in distribution. Close inspection of certain areas in the Colorado Rockies in recent years by various botanists, notably C. W. T. Penland, Walter Kiener, and R. C. Barneby, has demonstrated that there are several centers of concentration of arctic-alpine epibiotics in the Colorado flora where a remarkable number of extremely rare species occur widely disjunct from their nearest arctic stations. Among the most notable rarities are *Armeria maritima*, *Aulacomnium turgidum*, *Braya* sp., *Crepis nana*, *Cystopteris montana*, *Eutrema penlandii*, *Gymnomitrium corallioides*, *Luzula sudetica*, *Ranunculus gelidus*, *R. pygmaeus*, and *Rubus acaulis*. The principal centers of concentration are the region of Hoosier Pass, Gray's and Torrey's peaks, Mount Evans, the Rabbit-Ears range, the Elk Mountains of Gunnison County, and Pikes Peak.

*Phippsia algida* (Phipps) R. Br., a tiny grass, was one of the first of these arctic rarities to be found in Colorado. Harry N. Patterson collected it in 1875, somewhere in the Clear Creek District west of Denver. Unfortunately, the citations in the literature with respect to Patterson's collection are not in harmony: "summit of Gray's Peak" (Hitchcock, Man. Grasses of U. S.); "Chicago Lake, near Georgetown" (Rydberg, Flora of Colorado); "high mountain peaks of Colorado, and probably Wyoming" (Coulter & Nelson, Manual of Rocky Mountain



Botany). Patterson's specimens were distributed among eastern herbaria and possibly to herbaria in Europe, but not a single specimen found its way into a herbarium in the Rocky Mountain region. This was unfortunate, because it now appears that considerable time and energy expended in efforts to rediscover *Phippsia* might have been saved had there been a readily available sheet of the original collection in a local herbarium.

In view of the fact that *Phippsia* was never collected elsewhere in the United States, nor was even represented in herbaria of the region in which it was first collected, the species has aroused considerable interest among Rocky Mountain botanists during the past half-century.

When a species is found only once in an area despite constant botanizing by many people over a period of 75 years, questions naturally arise as to whether it might have become extinct, or whether the plant really was collected in the area in the first place. With alpine species, such questions are tantalizing but solutions are seldom forthcoming because of the vastness and high degree of inaccessibility of the terrain above timberline. A collector's itinerary may be traced in regions where there are well-marked communities, trails, or roads, but on the tundra it is hard to guess at the direction a former collector was most likely to have taken. Even if this were possible, one might easily pass within a few yards of a coveted species without seeing it.

*Phippsia*, I am convinced, is about the most elusive alpine fugitive that could be imagined. It is extremely small, it possesses no outward distinctiveness of its own, and it grows in a region where numbers of other species might be easily mistaken for it. *Phippsia* is what some botanists would call a "belly-plant," standing only a few centimeters high (1-2 cm. in our specimens), having rather glaucous green, soft, smooth leaf-blades with boat-shaped tips, as in *Poa*. In the vegetative state it might be passed over for a small *Poa*, such as *P. annua*. The inflorescence is a rather tight, short, inconspicuous panicle hardly exceeding the leaves. The spikelet is one-flowered, and the diagnostic features are the very unequal glumes which are much shorter than the floret. The first glume is sometimes lacking. Considering the minute size of the plant, its drab appearance, our lack of specimens readily available for comparison, the ab-

sence of precise locality, habitat, or phenological notes which might have served as guides, and the rugged, trackless nature of the terrain in the Georgetown area, it is easy to see why the search for *Phippsia* has been prolonged and unrewarding.

This article, however, is written not as an obituary to the wasted efforts of botanists who over the years have tried and failed. On the contrary, we now are able to report that the mission, at long last, has been successful and that the occurrence of *Phippsia* in the United States is verified. The circumstances of the discovery and the events leading up to it are recorded here in order to aid botanists in future searches elsewhere in the Rocky Mountains, and to bring into sharp focus the importance of careful recording and citation of collection data.

During the past six years I have been keenly interested in the *Phippsia* problem, and have sought *Phippsia* on all of my excursions above timberline. Following Hitchcock's citation, my efforts were concentrated upon the slopes of Gray's Peak, a 14,000-foot spire in east-central Colorado. The summit of Gray's Peak, if the citation is to be taken literally, is hardly a habitat for this grass, for above 13,500 feet the mountain is a barren, dry boulderfield offering hardly a foothold for anything, much less a semi-aquatic grass species such as *Phippsia* seems to be in its arctic habitat.

Unable to discover the grass in numerous trips to the Gray's Peak region, I naturally went to the literature in order to see if there might be any light forthcoming from the citations. Rydberg's *Flora of Colorado* happened to provide the key to the whole situation, although I didn't realize this at first. Rydberg's citation reads, "Chicago Lake, near Georgetown." It so happens that Chicago Lake is not on Gray's Peak nor even near it, but is a high alpine lake on the slopes of Mount Evans, about ten miles farther east.

This bit of information suggested that an examination of Patterson's original specimens might be in order, because the citations of Hitchcock and Rydberg were obviously contradictory. Dr. Julian Steyermark very kindly provided me with a facsimile label from the specimen in Field Museum. This is one of Patterson's characteristic printed labels, and reads in part as follows: "Colorado Flora—Mts. about the head waters of Clear



Creek—Alt. 11–14,000 feet. High mountains, Gray's Peak and vicinity. H. N. Patterson Sept. 2, 1885." This evidently, was the portion of the label which Hitchcock chose to cite in the Manual of Grasses. However, there is a slight addition to these data, written in Patterson's own hand, as follows: "wet places, alt. 1000 ft. above (s. of) Upper Chicago Lake." This was the portion of the label which Rydberg chose to cite in his Flora of Colorado. As is often the case with the older collections, the printed label contained rather general information and could be used for plants from any locality within a large general area, whereas any additional specific information was written in by hand. Here, apparently, was the specific information we needed. It seemed obvious that our efforts should be withdrawn from Gray's Peak and directed to the Chicago Lake Basin on the north-east slope of Mount Evans.

Hoping to duplicate as closely as possible the collecting date on which Patterson found *Phippisia*, Dr. T. P. Maslin, Dr. Sam Shushan and I drove to Mount Evans on September 4, 1951. We found that the excellent highway to the summit of Mount Evans skirts a high ridge directly east of the Chicago Lakes basin, and at Summit Lake it approaches a saddle from which the lakes may be seen from a point just about "*a thousand feet above (south of) the upper Chicago Lake.*" After descending a short way into the cirque, we were unable to locate any likely sites for *Phippisia*, and were almost ready to chalk up another wasted afternoon. We sat on the rocks along the shore of Summit Lake to eat our lunch and to meditate upon the futility of botanical exploration. After lunch we all felt better about the situation and decided to walk around Summit Lake for one last look. The rest is history. For *Phippisia* was waiting for us in the beds of the small inlet streams feeding Summit Lake. It is hard to describe our consternation. After all the arduous climbs up into inaccessible cirques and couloirs, risking life and limb in a futile search, we now found our plants in full view of the highway and practically on a level with it; in fact, within easy walking distance of the Summit Lake shelter house.

There were certain aspects of the plants and of their habitat that should be noted. These plants form loose tufts in the drying beds of small inlet streams feeding Summit Lake. It is my

opinion that the entire plant is probably submerged during most of the year, either covered by snow or by the nearly-freezing water of snow-runoff. When we found the species in early September, the inflorescences were just beginning to emerge from the "boot." Very often, only the distal portions of the leaf-blade are visible because of the sand which is constantly washed over the plants. *Phippsia* is the only vascular plant that grows right in the stream channels.

The extreme rarity of *Phippsia* in the region may be due to the scarcity of relatively level wet areas at the high altitudes at which it grows. High lakes with gently sloping boggy margins are not common. It is probable that at the Summit Lake locality there exists a complex array of climatic and edaphic conditions and seasonal rhythms which are rarely met with elsewhere and which are not easily detected by our present tools of ecological analysis.

It is also possible that future exploration may show that *Phippsia* is more common in the Colorado Rockies than is now assumed. I personally doubt this, but the fact remains that, by and large, the alpine regions of Colorado are still relatively unknown botanically. The discovery of any new areas of relict concentration may change the picture radically.—UNIVERSITY OF COLORADO.

### STUDIES IN THE GENUS *EUPHRASIA* L.—III<sup>1</sup>

E. O. CALLEN

#### *EUPHRASIA* ARCTICA LANGE

IN a review of the origin and validity of the name *Euphrasia arctica*, Fernald (1933) pointed out that Linnaeus, and subsequently Willdenow, described *E. latifolia* from southern Europe and northern Africa, but that the plant now belongs to the genus *Parentucellia* as *P. latifolia* (L.) Caruel. In 1814 Pursh identified a Labrador plant (from the Dickson Herbarium) as *E. latifolia*, and for his *Flora Americae Septentrionalis* he copied Willdenow's description, but added this comment at the end:—"flowers smaller, pale purple." As a result, when identifying Canadian

<sup>1</sup> Previous papers in *Journal of Botany* 78 (933): 213-218, 1940; and vol. 79 (937): 11-13, 1941.



Rocky Mountain material collected by Drummond, Hooker (1838) attributed the name to Pursh.

In 1870 Rostrup clearly and validly published *E. arctica* Lange in a list of the plants from the Faeroe Islands, and mentioned that Prof. Lange had found the plant to be fairly common in Greenland and Iceland. Later however, in the text of his *Flora Danica*, Lange (1877) abandoned the name *E. arctica* in favor of *E. officinalis*, var. *latifolia* (Pursh) Lange, after discovering the Hooker record of *E. latifolia* from the Rocky Mountains, though the actual plate for the *Flora Danica* was obviously made from typical Greenland material. The name *E. arctica* itself he reduced to a synonym.

Fortunately the Drummond material from the Rocky Mountains, called *E. latifolia* Pursh by Hooker, still exists in the Gray Herbarium, and Fernald (1933) determined it to be *E. disjuncta* Fernald & Wiegand. Unfortunately the material from the Dickson Herbarium, on which Pursh based his description, cannot now be traced. However, Fernald (1933) pointed out that the only Labrador species with small purple flowers are:—*E. williamsii*, var. *vestita*, *E. purpurea* and *E. purpurea*, var. *randii*.

In 1896 Wettstein revived the name *E. latifolia* Pursh, giving a very full description of the plant. He had examined a good deal of material from Greenland, as well as from Iceland and Labrador, all apparently belonging to one species, though a variable one. His conception of this species, therefore, is based largely on Greenland material, and as he had seen no material from Labrador referable to any other species, and as no other species had been described from Labrador, he felt that the name *E. latifolia*, by then unoccupied again, should be used in preference to creating a new one and so cause further confusion in the synonymy. Thus *E. latifolia* Pursh ex Wettstein came into general use, and though Wettstein was aware of the existence of the name *E. arctica*, the fact that Lange abandoned it himself in 1877, drew attention away from it. However, under the International Rules of Botanical Nomenclature (1930), *E. latifolia* Pursh ex Wettstein constitutes a homonym, and as such is invalid. This leaves *E. arctica* Lange as the first valid description of the plant from Greenland, Iceland and the Faeroe Islands, and as we now know, from eastern and north-eastern Canada.



In his Revision of the British Euphrasiae, Pugsley (1930) followed Wettstein in the use of the name *E. latifolia* Pursh, but while the paper was in press, the resolution rejecting homonyms was passed by the Fifth International Botanical Congress. He therefore decided to substitute a new name, *E. frigida* (1930), adding it as a footnote during proof correction, without however specifying a type. The late A. J. Wilmott, Curator of the British Herbarium of the British Museum, London, informed the writer in 1940 that he had persuaded Pugsley to designate a lectotype on one of the four sheets of *E. latifolia* from the Wettstein Herbarium that had been borrowed from Vienna for that purpose. Nevertheless it is quite clear that *E. arctica* Lange has priority over *E. frigida* Pugsley, even although there has been no actual type designated.

With *E. frigida* identified as the subglabrous *E. arctica* of Iceland, Greenland and Canada, the question naturally arises, has the more or less pubescent form of *E. arctica*, as originally described by Rostrup, been described from Britain or northern Europe? An examination of exsiccatae leaves no doubt that it has been described as *E. marshallii* Pugsley from Britain, and as *E. latifolia*, var. *subcurta* E. Joerg. from Norway. Pugsley's concept of *E. latifolia* Pursh ex Wettstein was of a glabrous or subglabrous taxon, which he renamed *E. frigida*, narrowing down Wettstein's concept, that included both glabrous and pubescent individuals. Subsequently however, after seeing material from Iceland, Pugsley (1933) incorporated Joergensen's *E. latifolia* var. *subcurta* into his *E. frigida* as var. *subcurta* (E. Joerg.) Pugsley, thus broadening his original conception of *E. frigida* and bringing it into line with Wettstein's interpretation. It is interesting to note that some of Marshall's material, which formed the basis of Pugsley's *E. marshallii*, was submitted to Wettstein at the time of collection, and was identified as *E. latifolia* Pursh.

In contrasting *E. frigida* (as *E. latifolia*) with *E. marshallii*, Pugsley (1930, p. 497) pointed out how the former is "—a lax, much less hairy plant,—." Later (1933) he admitted that what he had described as *E. frigida* from Britain, should really have been described as a variety of the European *E. latifolia* Pursh, which he now wished to call the typical *E. frigida*. Until 1933

Pugsley's concept of *E. frigida*, as we now see from his own admission, was so narrow, that of necessity he had to give specific rank to the very pubescent plants of the Scottish sea cliffs and shores.

This conception of a species with pubescent and glabrous forms was accepted by Pugsley in some other taxa, though mainly after he had published his Monograph (1930), as for example in the case of *E. curta* Fries (pubescent) and its var. *glabrescens* Wettstein (or f. *glabrescens* Wettstein as Pugsley sometimes wrote it, though this form should more correctly be attributed to Pugsley). In *E. brevipila* B. & G. (with some setae, bristles and short-stalked glands), and its f. *subeglandulosa* Bucknall (setae and bristles only) and var. *notata* Pugsley (densely covered with long-stalked glands) there is quite a range of pubescence. Bucknall's f. *subeglandulosa* was only used by Pugsley on herbarium sheets in the post 1930 period.

During the course of correspondence with the late A. J. Wilmott, while he was evolving his scheme for the identification and study of critical groups (Wilmott 1950), it became evident that in British material, the degree of pubescence may vary considerably within specific limits. This had already been noted for some species by Wettstein in his Monograph. In a study of the Kashmir Eyebrights, Pennell (1943) found three species (*E. platyphylla* Pennell, *E. foliosa* Pennell and *E. kashmiriana* Pugsley) where pubescence was quite variable. Among the North American representatives of the genus, Fernald and Wiegand (1915) found the same thing in *E. williamsii* Robinson, *E. purpurea* Reeks and *E. arctica* Lange. Turning to the Scottish material, Pugsley separated *E. marshallii* from *E. latifolia* (*E. frigida*) largely on the basis of the pubescence which, in the light of our knowledge of the genus as a whole, is insufficient grounds for the creation of a new species.

*E. arctica* is relatively common on the coastal regions of eastern and northern Quebec, Newfoundland, Baffin Island, Greenland, Iceland, the Faeroe Islands, Scotland (including the Orkney and Shetland Islands), Norway, Sweden, Finnland and Lappland. The range is believed to extend into Siberia, but verification of this is virtually impossible. It is a very variable species, as was recognized by Wettstein. Joergensen also found it so variable,



that when he published his *Die Euphrasia-Arten Norwegens* (1919), he created five varieties and one form, all based on Norwegian material alone. He had had an opportunity of examining material from Greenland, Iceland, the Faeroe Islands, Newfoundland and Alaska, lent to him by the Botanical Museum of the University of Copenhagen. Much of it he found was glandular, especially when collected from damp grassy locations, and sometimes the plants were covered with a felt-like mass of long white hairs, without glands. He did not attempt to apply varietal names to any of this material however.

In 1933 Pugsley reviewed this species again, also having had an opportunity of examining material from the Botanical Museum of the University of Copenhagen, much of it from Greenland, Iceland and the Faeroes, and probably the material seen by Joergensen. It was then that he realized the narrowness of his conception of *E. frigida* (*E. latifolia*). The only variety created by Joergensen that he adopted was var. *subcurta*, easily recognizable on account of its pubescence. He created four additional varieties.

In 1940 Polunin added var. *minutissima* from Greenland, which Rousseau (1942) reduced to the status of a form, as he felt sure that it represented a growth form due to exposure only.

Also in 1940, Nordhagen published his *Norsk Flora* in which the genus *Euphrasia* is largely a summary of Joergensen's paper (1919). However, he incorporated Joergensen's *E. minima* Jacq. and *E. latifolia* Pursh into *E. frigida* Pugsley, and divided it into two "types." The first is the "minima type," small leaved and small flowered, with short, weak, unbranched stems, which corresponds to Pugsley's var. *laxa* and Joergensen's var. *obtusata*, and the "latifolia type," much stouter, with large leaves and flowers, often with considerable pubescence on both surfaces of the leaves, which corresponds with Joergensen's var. *subcurta* and Pugsley's *E. marshallii*, and which represents *E. arctica* Lange, var. *arctica*. Nordhagen recognized two varieties however, as being sufficiently distinct—*E. latifolia*, var. *inundata* E. Joerg. and *E. minima*, var. *palustris* E. Joerg. For this latter variety, no particulars of calyx, flower or capsule are given.

In 1943 Montell recorded *E. frigida* Pugsley, var. *palustris* (E. Joerg.) Nordh. for Finland, and added a new taxon, *E. frigida*,

var. vel. f. *purpurea*, based simply on plants with purple flowers. He also mentioned a f. *eglandulosa* Wettst. of *E. frigida*, which it has not been possible to trace in Wettstein's monograph, nor in Pugsley's and Nordhagen's papers on *E. frigida*.

More recently three new species of *Euphrasia* were described by Pugsley (1945) from the Hebridean Islands off the Atlantic coast of northern Scotland. Through the kindness of Dr. George Taylor, Keeper of Botany, British Museum, London, photographs of these Pugsley type specimens have been obtained, and there is no doubt that *E. eurycarpa* Pugsley, with its small flowers and short lower lip, and the deeply emarginate capsules exceeding the calyx teeth, is the northern arctic form described by Joergensen as *E. latifolia*, var. *submollis*, and by other authors under other names to be mentioned presently.

The paper by Joergensen (1919) is well illustrated, while that of Pugsley (1933) contains neither figures nor plates. In the latter case however, for most varieties, illustrations are quoted from other sources. A careful examination of the descriptions, plates and material leads to the conclusion that there is needless duplication of varietal names, and that in reality there are only five varieties of *E. arctica*.

Lange described *E. arctica* as having visco-puberulent foliage, and in North America this is recognized as the typical form of the species. It therefore seems clear that the plant described by Joergensen and Pugsley as var. *subcurta* really is the species proper.

***Euphrasia arctica.* Lange ex Rostrup 1870**

Folia visco-puberula, reniformi- vel cordato-orbicularia, obtusissime crenata, margine revoluta; bractae majusculae, sensim acutis crenatae v. serratae; flores subcapitato-congesti.

The chief points for identification are: branching from the middle of the stem or lower, branches erect, sometimes branching again; plants generally flowering from the 7-10 nodes. Cauline leaves generally caducous. Floral leaves broadly ovate to obtuse, medium to dark green, 5-15 mm. long, with 5-6 subacute to acute (but never acuminate) teeth per side. All more or less densely covered on both surfaces (or only on the margins and nerves of the lower surface) with short or long, strong, whitish bristles, sometimes with an admixture of short-stalked glands. Calyx clothed like the leaves, with rather long, acute teeth, accrescent in the fruit. Corolla small to medium, exceeding the bracts (floral leaves), 4-8 mm. long dorsally, white, with more or less lavender upper lip; lower lip exceeding



the upper. Capsule elongate elliptical, 6–8 mm. long, deeply emarginate, equalling to exceeding the calyx teeth, slightly pilose above, as well as ciliate, distinctly pedunculate.

A great deal, though not all, of the material from north of the 60th parallel possesses an admixture of short-stalked glands.

Only the synonymy relevant to the problem discussed here is included. For the complete synonymy the works of Wettstein (1896), Fernald & Wiegand (1915), Joergensen (1919), Pugsley (1930) and Fernald (1933) should be consulted, and Lange (1877), Wettstein (1896), Joergensen (1919) and Pugsley (1930) for figures and plates.

In the following paragraphs the location of the herbarium material mentioned is as follows: "N" in the Herbarium of the National Museum of Canada, Dept. of Mines and Resources, Ottawa; "B" in the Herbarium of the Division of Botany and Plant Pathology, Dept. of Agriculture, Ottawa. The writer is indebted to the officers in charge of these Herbaria for permission to borrow material.

### ***E. arctica*, var. *arctica***

*E. latifolia* Pursh (non Linnaeus) (1814); *E. officinalis*, var. *latifolia* (Pursh) Lange (1877); *E. latifolia*, var. *subcurta* E. Joergensen (1919); *E. marshallii* Pugsley (1929); *E. frigida*, var. *subcurta* (E. Joerg.) Pugsley (1933).

ICON. Lange (1877) tab. mmdcccex.

EXSICC. see Wettstein (1896), Joergensen (1919), Pugsley (1933). TYPE: **Faeroe Islands**, Sandyford, Stromö, 31 August 1867, E. Rostrup (in Herb. Haun.). **Canada**: Lewis, H. F., Natashquan, Saguenay Co. Que., 5 Aug. 1927 (N); Collins, J. F., Fernald, M. L. & Pease, A. S., 70048, between Baldé and Baie des Chaleurs, Que., 5/8 Aug. 1904 (N); Adams, J., Anticosti. Que., 1933 (B). **Greenland**: Rosenwinge, L. K., Fgaliko, Greenland, 2 Aug. 1888 (ex Herb. Haun.) (N).

Plant more or less stout, branching below the middle of the stem. Floral leaves large, with short or long, strong, white bristles on the margins and on the nerves of the lower surface (sometimes more or less densely covering both surfaces). Calyx clothed like the leaves. Corolla medium, 6–8 mm. long dorsally, white with lavender upper lip, lower lip exceeding the upper. Capsule emarginate, equalling to slightly exceeding the calyx teeth.

Under the International Rules accepted in 1950, this variety delimits more clearly the plant first described by Lange and recognized as the typical *E. arctica*.

***E. arctica*, var. *obtusata* comb. nov.**

*E. latifolia*, var. *obtusata* E. Joergensen (1919); *E. frigida* Pugsley (1930); *E. frigida*, var. *laxa* Pugsley (1933); *E. frigida* "minima typen" Nordhagen (1940).

Icon. Joergensen (1919) pl. IX, o-r; Pugsley (1930) pl. 27, a-e.

EXSICC. see Joergensen (1919) and Pugsley (1933). TYPE: **Norway**, Sörkjosen in Nordreisa, Tromsø Amt, 13 Aug. 1908, E. Joergensen. **Canada**: Calder, J. A., No. 2222, Crystal Island, Fort Chimo area, 58° 07' N-68° 23' W, Que., 1 Aug. 1948 (B); Rousseau, J. & Boivin, B., No. 32236, Restigouche River, Que., 25/26 Aug. 1929 (N); Fernald, M. L. & Pease, A. S., No. 25273, Seacliffs, W. of Marten River, Gulf of St. Lawrence, Gaspé Co., Que., 25 July 1922 (N); Waghouse, Rev. A., No. 14474, Fox Harbour, Labrador, July 1881 (N). **Greenland**: Sörensen, Th., No. 4699, Terneskaer Island, 73° 55' N-21° 00' W, 26 July 1933 (N); Porsild, A. E., No. 304, Warnsprings, Engelskmandel Havn, S. coast of Disko Island, nr. Godhavn, 69° 14' N, 27/28 July 1937 (N). **Scotland**: Callen, E. O., No. 537 & 541, Stobinian, Perthshire, 5 Aug. 1940 (Herb. Callen).

Graceful, sometimes flexuose, often unbranched stem with very long internodes in the middle of the stem, and very short upper ones, giving imbricate floral leaves. Pubescence generally slight, and confined to the margins of the leaves and the calyx, and the nerves of the underside of the leaf and of the calyx. Calyx broad. Capsule elongate-elliptical, emarginate, often deeply so, and exceeding the calyx teeth. Flowers medium, 6-8 mm. long dorsally.

Pugsley described this as the "Scottish" or mountain form, and mentioned (1933) that it appeared to be common in Norway, and that it was to be found in Sweden and Lapland, as well as Greenland, Iceland and the Faeroes. In his Monograph (1930) he suggested (p. 491) that *E. latifolia*, var. *obtusata* E. Joerg. of Norway might be the same as the British *E. latifolia*, though he did not take this up again in his later paper (1933). Nordhagen's use of the term "minima typen" recalls the fact that Pugsley (1936) placed the British *E. latifolia* (as *E. frigida*) close to *E. minima* Jacq. in his classification of the genus *Euphrasia* section *Semicalcaratae* Benth., and that therefore in interpreting "minima typen," the var. *obtusata* appears to be the one that would most often be intended.

Joergensen never cited types for his plants, so under the International Rules, the first specimen mentioned\* by him becomes the type.

\*We have not been able to substantiate such an assumption.—Eds.



***E. arctica*, var. *submollis* comb. nov.**

*E. latifolia*, var. *submollis* E. Joergensen (1919); *E. marshallii*, var. *pygmaea* Pugsley (1930); *E. frigida*, var. *pusilla* Pugsley (1933); *E. arctica*, var. *minutissima* Polunin (1940); *E. arctica*, f. *minutissima* (Polunin) Rousseau (1942); *E. eurycarpa* Pugsley (1945).

ICON. Wettstein (1896) tab. XI, f. 12; Pugsley (1930) pl. 28, h.

EXSICC. see Joergensen (1919), Pugsley (1930, 1933, 1945) and Polunin (1940). TYPE: **Norway**, Insel im Flusse Altenelv, Alten, Finnmarken Amt, 20 July 1913, O. D. **Canada**: Wynne-Edwards, V. C., No. 7306, Forbisher Bay, Yorke Island, Baffin Land, 2 Aug. 1937 (N); Malte, M. O., No. 119138, Wakeham Bay, Hudson Strait, 61° 40' N-72° 05' W, Que., 29 Aug. 1927 (N); Malte, M. O., No. 120163, Port Burwell, Hudson Strait, 60° 22' N-64° 50' W, Que., 25/28 July 1928 (N); Polunin, N., No., 1532, Sugluk West, Que., 31 July 1936 (N).

Plant small, flowering from the second or third node above the cotyledons. Leaves (cauline and floral) pubescent, often (but not always) with an admixture of short-stalked glands. Calyx clothed as the leaves. Flowers small, 3-4 mm. long dorsally, lower lip scarcely developed. Capsule more or less deeply emarginate, exceeding the calyx teeth.

This is the northern arctic variety of the species. Neither Joergensen nor Pugsley have given complete data of their varieties, but there seems to be no doubt that they were dealing with the same taxon in each case. Polunin's material is minute (p. 212), and some of Pugsley's var. *pusilla* is very stout, but these are probably extreme growth forms as suggested by Rousseau (1942), which in the present state of our knowledge of the whole *E. arctica* complex, should remain undesignated till the limits of the varieties are more clearly understood.

This variety is now known from Norway, Scotland, Iceland, Greenland and Canada, and although some of these countries are not arctic, the flora of their higher mountains is of the arctic-alpine type.

***E. arctica*, var. *inundata* comb. nov.**

*E. latifolia*, var. *inundata* E. Joergensen (1919); *E. frigida*, var. *attenuata* Pugsley (1933); *E. frigida*, var. *inundata* (E. Joerg.) Nordhagen (1940).

ICON. Joergensen (1919) fig. 16; Taf. IX, f. k, l; Taf. XI, a.

EXSICC. see Joergensen (1919) and Pugsley (1933). TYPE: **Norway**: Nahe der Mündung des Flusses Reisenelv, Sörkjosen in Nordreisa, Tromsø Amt, July 1905, Elm, Peters & Selander. **Canada**: Hosie, Losee &

Bannan, No. 2150, Wilson Island, off Rossport, Thunderbay District, Ont., 15 July 1937 (N); Hosie, Losee & Bannan, No. 2149, beach nr. Schreiber, N. shore, Lake Superior, 48° 45' N-87° 15' W, Thunderbay District, Ont., 20 July 1937 (N); Baldwin, Hustich, Kucyniak & Tuomikoski, No. 1037, nr. Sandy Point, Great Whale Lake, E. coast, Hudson Bay, Que., 15 August 1947 (N).

Plants with long internodes and small leaves. Flowers small. Calyx teeth acute or less. Capsule narrowly oblong, up to 8 mm. long, narrow above, greatest breadth about the middle, subtruncate or slightly retuse, clearly exceeding the calyx teeth.

This variety is found in moist situations, and even in areas flooded by river water. It has been found in Norway, Iceland and Canada.

***E. arctica*, var. *stromoensis* comb. nov.**

*E. frigida*, var. *stromoensis* Pugsley (1933).

ICON. none.

EXSICC. Pugsley (1933). TYPE: **Faeroe Islands:** Havnedal, Stromö, 1903, Ostenfeld (in Herb. Haun.).

Plant small, robust, slightly pilose, lower internodes very short, and branching from the lower nodes. Corolla small, 4-5 mm. long dorsally. Capsule oblong-elliptical, strongly emarginate. Pugsley does not state the relationship of the capsule and the length of calyx teeth.

This plant does not appear to have been described from Norway or Britain, though plants that seem to resemble it have been seen from Perthshire, Scotland. Until the type specimen and the British Museum material from the Pugsley Herbarium can be examined, this cannot be certain however. This variety has not been seen from Canada.

REJECTED VARIETIES

*E. LATIFOLIA*, var. *SUBFOULAENSIS* E. Joerg.—this a curious name to choose for a variety, as *E. foulaensis* is closely related to *E. latifolia*, but it points up the confusion that existed amongst European botanists as to the correct identity of *E. latifolia* Pursh ex Wettstein and *E. foulaensis* Towns., until they were redefined by Pugsley in 1930. Joergensen admitted that this variety is difficult to distinguish from *E. micrantha* Reichenbach, and that it is probably a hybrid with this species. The characters that are given for this variety, suggest that there is more of the *E. micrantha* parentage in its make up, than of the *E. latifolia* parentage. There appears to be no justification for including it as a variety of *E. latifolia*, as the general appearance of the plant suggests *E. micrantha* very strongly. It differs from the latter chiefly in the longer lower internodes, and in the much larger coarser leaves.



*E. FRIGIDA*, var. *PALUSTRIS* (E. Joerg.) Nordhagen—these plants bear a close resemblance to *E. scotica* Wettstein, which Nordhagen himself admits (p. 581), and here also it would seem best to place this plant under *E. scotica*, with a note that it might be of hybrid origin.

*E. MINIMA*, var. *PILOSA* Hagelund ex E. Joergensen—was ignored by Nordhagen when he amalgamated Joergensen's *E. minima* Jacq. and *E. latifolia* Pursh under *E. frigida* Pugsley. From the description given, this might be *E. arctica*, var. *submollis*, but the description is lacking in a number of details to make this reasonably certain.

*E. FRIGIDA*, var. vel f. *PURPUREA* Montell—at most this is a form with purple flowers, that for the present will have to be left in abeyance till the different varieties of *E. arctica* are more clearly understood. This applies also to the forms of *E. latifolia* and *E. frigida* described by other authors.—  
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## NOMENCLATURAL AND OTHER NOTES ON MOSESSES—II

HERBERT HABEEB

THE following notes cover a few interesting things recently encountered in the processing of some New Brunswick specimens of mosses.

*FISSIDENS CRISTATUS* Wils., forma **immarginatus**, n.f., differt a species margine pellucida foliorum deficiente.—NEW BRUNSWICK: hanging from ledge in a crevice in canyon at Grand Falls, Victoria County, *Habeeb* 279 (type), May 5, 1944.

I see no reason why the form possessing leaves without the hyaline margin should not be recognized.

*MYURELLA CAREYANA* Sull., var. **tenella**, var. nov., plantae parvulae, tenerimae, flagelliferae; foliis lanceolatis, cellulis papillois; cum habitum *Amblystegiellae*.—Small, thin, flagelliferous plants; leaves lanceolate and serrate, cells strongly papillose; with the habit of *Amblystegiella Sprucei*.—NEW BRUNSWICK: *Habeeb* 821, on damp rock in deep shade of canyon, July 3, 1947, Grand Falls, Victoria County.

Without the field knowledge of habitat and associated plants, this would have been rather difficult to place.

*HYGROHYPNUM MOLLE* (Schimp.) Loeske *Habeeb* 951, 952, York County, New Brunswick; 1641, Albert County, New Brunswick, this has rather strong costae in its leaves.

*HYGROHYPNUM MOLLE* (Schimp.) Loeske, var. **Bestii** (Ren. & Bryhn), stat. nov. *Hypnum* (*Limnobium*) *Bestii* Ren. & Bryhn, REV. BRYOL. **28**: 8 (1901). *Hygrohypnum Bestii* (Ren. & Bryhn) Holzinger,<sup>1</sup> THE BRYOLOGIST **4**: 12 & 22 (1901). *Hygrohypnum Bestii* (Ren. & Bryhn) Broth., ENGLER & PRANTL MUSCI (Ed. I) **2**: 1040 (1908). *Habeeb* 1640, Albert County, New Brunswick; 1639, 1642, 1643 and 1644 are turgid and possess secondary stems inseparable from the species, Albert County, New Brunswick; 918, Victoria County, New Brunswick, turgid without secondary shoots.

<sup>1</sup> On looking back into the early files of THE BRYOLOGIST, one finds that using the exact letter this could be cited as *Hygrohypnum Bestii* (Ren. & Bryhn) Holzinger apud Grout et Smith in Editor's footnote to Holzinger, THE BRYOLOGIST **4**: 22 (1901). In place of this complex citation, Grout in the Moss Flora of North America North of Mexico, Volume III, used that of Brotherus of 1908.

At a spring in the hills near Alma, Albert County, New Brunswick, the writer was very fortunate in being able to collect a series of the plants in question. These go from the large var. *Bestii* with its long stems and rather harsh, twisted, near-second leaves to a large, shorter stemmed, softer, rather turgid form still var. *Bestii*; but this latter gave off smaller secondary shoots inseparable from the species, *H. molle*, with a strong costa in its leaves. To complete the series one specimen was practically all *H. molle*, i.e. secondary shoots.

Several years ago I collected a tuft of the turgid form of var. *Bestii*, devoid of any secondary branches, sitting in a trickle of water in the canyon at Grand Falls, New Brunswick. From the description and drawings (originally from the pen of Renauld) given in Grout's Moss Flora of North America North of Mexico, the specimen did not seem to fit into *Hygrohypnum Bestii*; but rather into that of *Hypnum turgescens* Schimp. This latter I now know to be something else.

The drawing of the leaf by Renauld is very poor. He seems to have drawn leaves that must have lost their alar regions in the removal from the stem for examination resulting in a lanceolate outline. Grout gives broadly ovate for the leaf outline. To go to the other extreme, I would be tempted to call it subcordate.

It is now easy to see why the name *Hypnum turgescens* T. Jensen is included in the synonymy of *Hypnum Bestii* as given by R. S. Williams in THE BRYOLOGIST 4: 21 (1901); and why Dr. Best determined Holzinger's original specimen from Montana as *Hypnum turgescens* Schimp. The var. *Bestii* can be as turgid as *Hypnum turgescens* itself.

It may be worth mentioning that I had authentic specimens of the following for comparison: *Hygrohypnum molle*, Allen's Mosses of the Cascades 142; and var. *Bestii*, Allen's Mosses of the Cascades 141 and Williams 166 from Montana.

Other noteworthy mosses recently collected by me in New Brunswick are: Albert County *Oncophorus polycarpus* (Hedw.) Brid., *Rhabdoweisia denticulata* (Brid.) Bry. Eur., *Racomitrium heterostichum*, var. *sudeticum* (Funck) Jones, *Pohlia longicolla* (Hedw.) Lindb., *Calliergon Richardsoni* (Mitt.) Kindb., and *Hylocomium brevirostre* (Beauv.) Bry. Eur.; York County



*Orthotrichum microblepharum* Schimp., and *Eurhynchium Stokesii* (Turn.) Bry. Eur.; Victoria County *Camptothecium nitens*, var. *falcifolium* Ren. apud Nichols, and *Drepanocladus revolvens* (C. Muell.) Warnst.—GRAND FALLS, NEW BRUNSWICK.

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NOVELTIES IN HERMIDIUM (NYCTAGINACEAE)  
AND ASTRAGALUS (LEGUMINOSAE) FROM  
EASTERN UTAH<sup>1</sup>

C. L. PORTER

THE three novelties proposed below, all from the semi-desert area about five to six miles south of Vernal, Uintah County, Utah, were encountered during the favorable spring growing season of 1950. At that time the area was called to my attention by Dr. J. W. Hamilton and Prof. O. A. Beath, both of the Research Chemistry Department of the University of Wyoming, who first noticed the peculiar *Astragali* growing there and brought back specimens of them for me to examine. Being convinced that both were new, a collecting trip was made to the area and material of both *Astragali* was collected in quantity; and at the same time the *Hermidium* was discovered growing under the cap-rock of the canyon and likewise collected in quantity.

An attempt was made in the following year to recollect these plants when the area was revisited in June, 1951; but due to a severe drought in the area not a single plant of any of them could be found. Hillsides which had been covered with luxuriant vegetation the year before were now barren.

The type specimens of these proposed novelties are deposited in the Rocky Mountain Herbarium of the University of Wyoming. Duplicates will be distributed to the leading herbaria in the near future.

***Hermidium alipes* S. Wats.,<sup>2</sup> var. *pallidum* var. nov.**

A specie calycibus albis distinguendum.

Distinguished from the species by the white calyx.

TYPE: *C. L. Porter 5308*, on the Wasatch formation, 5 miles south of Vernal, Uintah County, Utah, June 3, 1950. Elevation about 5,200 ft.

<sup>1</sup> Contributions from the Department of Botany and the Rocky Mountain Herbarium, University of Wyoming, no. 220.

<sup>2</sup> S. Watson in King, Geol. Expl. 40th. Par. 5: 286. pl. 32. 1871.

The monotypic genus *Hermidium* has hitherto been known to me only from western Nevada and adjacent California, and from a single station (8 miles northeast of Troutcreek, *Maguire & Becraft* 2579) in western Juab County, Utah. The species regularly produces flowers with a purplish calyx, the color usually becoming accentuated in drying. The proposed variety showed no trace of purple coloration of flowers in the several large plants seen, and it extends the known range of the genus considerably to the eastward.

***Astragalus* (*Lonchophaca*) *hamiltoni* sp. nov.**

Herba perennis, 4–5 dm. alta, cum radice lignosa et caudice breve. Caules erecti, ex eadem basi aliquot, strigosi cum pilis planis, albis, appressis. Stipulae deltaformes, acutae, 2–5 mm. longae et 2–4 mm. latae ad basim. Folia pinnata, 3–7 (plerumque circa 5) cm. longa, pallide viridia et strigosa, foliolis 3–7 (plerumque circa 5), oblongis, plerumque rotundis ad apicem, 3–7 mm. latis et 10–30 mm. longis, ad axem irregulariter insertis, foliolis superioribus plerumque non oppositis et foliolo terminale cum rachide continuo. Pedunculi erecti, terminales et axillares, 3–10 cm. longi; racemi multiflores, 2–6 cm. longi, et racemis et pedunculis productionibus post anthesin; bracteae subulatae, circa 1 mm. longae. Pedicelli mox recurvantes, 1–3 mm. longi. Calyx campanulatus, pallide viridis, sed demum fuscus, strigosus, cum tubo 5–6 mm. longo et dentibus angustis triangularibus, circa 1 mm. longis. Corolla ochroleuca vel pallide flava, sed exsiccata sulphurea, 16–18 mm. longa, vexillo mediocriter arcuato, alis vexillum fere aequantibus, et petalis carinatis 2–3 mm. brevioribus. Siliquae aliquantulum strigosae, praesertim versus basin et in suturis, cum stipite 10–12 mm. longo calycem excedente, corpore subcylindrico ad basim apicemque acuto, saepissime 25–30 mm. longae, 5–6 mm. crassae, sectione transversa uniloculares. Semina reniformia, numerosa.

Plants perennial, 4–5 dm. high, with a woody root and short caudex. Stems erect, several from the base, strigose with flat, white, appressed hairs. Stipules deltoid, acute, 2–5 mm. long and 2–4 mm. wide at the base. Leaves pinnate, 3–7 (mostly about 5) cm. long, pale green and strigose, the leaflets 3–7 (commonly about 5), oblong, mostly rounded at the apex, 3–7 mm. wide and 10–30 mm. long, irregularly attached to the rachis, the upper leaflets commonly not paired and the terminal one continuous with the rachis. Peduncles erect, terminal and axillary, 3–10 cm. long; racemes several-flowered, 2–6 cm. long, both the racemes and peduncles elongating after anthesis; bracts subulate, about 1 mm. long. Pedicels soon recurved, 1–3 mm. long. Calyx campanulate, pale greenish, turning brown in age, strigose, the tube 5–6 mm. long, the teeth narrowly triangular, about 1 mm. long. Corolla ochroleucous or pale yellowish,

drying sulphur-yellow, 16-18 mm. long, the banner moderately arched, the wings nearly equaling the banner, the keel-petals 2-3 mm. shorter. Pods somewhat strigose, especially toward the base and on the sutures, with a stipe 10-12 mm. long and exceeding the calyx, the body subcylindric and pointed at both ends, mostly 25-30 mm. long and 5-6 mm. thick, 1-celled in cross section. Seeds reniform, numerous.

TYPE: *J. W. Hamilton & O. A. Beath*, s. n., on the Wasatch formation, 5 miles south of Vernal, Uintah County, Utah, May 24, 1950. Elevation about 5,200 ft. PARATYPE: *C. L. Porter 5313*, from the same locality, June 3, 1950.

The proposed species appears to be most closely related to *Astragalus lonchocarpus* Torr., from which it may be distinguished by its much broader leaflets and by its subcylindric and relatively broader and strigose pods. In Rydberg's key to the species of *Lonchophaca* (N. Am. Fl. 24: 312. 1929) this plant would run to his *L. macra* which was based on *Astragalus macer* A. Nels. (type seen) which is a clear synonym of *Astragalus lonchocarpus* Torr. It is a pleasure to name it for Dr. J. W. Hamilton who first noticed it in the field and called it to the attention of the writer. Chemical analyses of the plants have shown them to be non-seleniferous, as is true of other members of the group.

***Astragalus (Homalobus) spectabilis* sp. nov.**

Herba perennis, viridis, 1-2 dm. alta, e caudice ramoso caespitoso in summitate longae radiceis primariae. Caules erecti, in partibus vetustioribus reliquiis persistentibus petiolorum et stipulorum obductis, cum internodiis brevissimis. Stipulae ovato-lanceolatae chartaceae, circa 8 mm. longae et 3 mm. latae ad basim. Folia pinnata, plerumque 5-9 cm. longa, strigosa cum pilis gracilibus dolabriformibus, foliolis saepe 5-7, anguste linearibus vel spatulatis variantibus, apice acutissimis, plerumque 15-35 mm. longis, 1-4 mm. latis, foliolis 3 vel 5 terminalibus saepe perpropinquis. Pedunculi erecti et terminales, 6-12 cm. longi, folia vix excedentes; racemi 3-10-flores, 1.5-3 cm. longi, vix elongati post anthesin; bractae lanceolatae, hyalinae, nervus medius viridis, circa 5 mm. longae. Pedicelli ascendentes, 1-2 mm. longi. Calyx campanulatus, strigosus cum pilis nigris et albis mixtis, cum tubo circa 5 mm. longo et dentibus subulatis circa 4 mm. longis. Corolla puniceo-purpura, sed exsiccata cyaneo-purpura, 15-20 mm. longa, cum vexillo moderate arcuato et praeter alas et petala carinata excedente. Siliquae ascendentes, rectae vel moderate curvatae, cum lateribus complanatis et suturis prominentibus parallelis, ad basim rotundae et sessiles, abrupte ad apicem brevimucronatae, plerumque 2.5-3.5 cm. longae et 4-5 mm. latae (siliquis typi subimmaturo), sparsim strigosae, sectione transversa uniloculares. Semina reniformia, numerosa.



Plants perennial, green, 1–2 dm. high, from a branched caespitose caudex at the summit of a long taproot. Stems erect, the older parts covered with the persistent remains of petioles and stipules, the internodes extremely short. Stipules ovate-lanceolate, papery, about 8 mm. long and 3 mm. wide near the base. Leaves pinnate, mostly 5–9 cm. long, strigose with slender dolabriform hairs, the leaflets mostly 5–7, varying from narrowly linear to spatulate, sharply acute at the apex, mostly 15–35 mm. long and 1–4 mm. wide, the terminal 3 or 5 leaflets often closely approximate. Peduncles erect and terminal, 6–12 cm. long, just surpassing the leaves; racemes 3–10-flowered, 1.5–3 cm. long, not elongating much after anthesis; bracts lanceolate, hyaline except for the green midnerve, about 5 mm. long. Pedicels ascending, 1–2 mm. long. Calyx campanulate, strigose with intermixed black and white hairs, the tube about 5 mm. long, the subulate teeth about 4 mm. long. Corolla pinkish-purple, drying dark blue-purple, 15–20 mm. long, the banner moderately arched and exceeding the wings and keel-petals. Pods ascending, straight or slightly curved outward, laterally flattened, with both sutures prominent and parallel, rounded at the base and sessile, abruptly short-pointed at the apex, mostly 2.5–3.5 cm. long and 4–5 mm. wide (those of the type not quite mature), sparsely strigose, the cross section 1-celled. Seeds reniform, numerous.

TYPE: *C. L. Porter 5309*, on red sandy slopes of the Wasatch formation, in a canyon about 5 miles south of Vernal, Uintah County, Utah, June 3, 1950. Elevation about 5,200 ft. PARATYPE: *J. W. Hamilton & O. A. Beath*, s. n., from the same locality, May 24, 1950.

*Astragalus spectabilis* is readily referred to the subgenus *Homalobus*, and it seems to have affinities with the section *Campestres*, to which it would key in Rydberg's treatment (N. Am. Flora 24: 256. 1929), but it has larger and more brightly-colored flowers than is typical of that complex, and the banner is not so strongly arched. It is a strikingly handsome plant when in bloom, and might well be worth cultivating in rock gardens. It is non-seleniferous.

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A NOTE ON HALIMOLOBOS.—Each time populations of *Halimolobos virgata* (Nutt.) Schulz have been examined in the high valleys of the main chain of the Rocky Mountains and in the foothills of the Uinta Mountains, I have been impressed by the differences in the plants of these two areas and the habitats in which they occur. In South Park, Colorado, and in the Laramie Range between Laramie and Cheyenne, Wyoming, plants of this species grew erect in open grassy meadows. In the foothills northeast and north of the Uinta Range, in Utah and adjacent

Wyoming, the plants did not occur in the open and seemed to require support from the shrubs among which they grew. Now, with two new collections taken from these areas during the past summer (1951) available, a restudy of the material in the Gray Herbarium shows that there is considerable variation when plants of the entire species range are included.

The specimens of Nuttall's collection, upon which the species was based, are similar to specimens from the meadow valleys and high plains. This phase of the species extends from central Colorado to Saskatchewan and Alberta and apparently has weedy tendencies, for it has been collected in vacant lots in Laramie and along roadsides in the Laramie Range by Dr. C. L. Porter. Toward the southwestern part of Wyoming the variation tends in the direction of longer petioled basal leaves, more remote cauline leaves, and longer siliques, tendencies epitomized in the Uinta foothill phase of the species. Attention is called to these trends in the total variation of *H. virgata* in the hope that other botanists working the area will aid in determining whether they have any real significance.

Previous reference<sup>1</sup> to the similarity between *H. virgata*, once considered to be a *Sisymbrium*, and *H. mollis*, formerly placed in *Arabis* as *A. Hookeri*, has apparently left either no impression or the wrong one on both Hultén<sup>2</sup> and Porsild.<sup>3,4</sup> The latter suggests that both be retained in *Arabis* and that the two are conspecific. I do not agree with him on either of these points but there is more reason to place all the material in one species than to put it in the genus *Arabis*. As formerly pointed out, the cotyledons are incumbent in *H. mollis* and *H. virgata*, and accumbent in *Arabis*, but that is only one point. More importantly, to put these species in *Arabis* ignores their natural relationships with *Halimolobos hispidula*, *H. perplexa*, and *H. Berlandieri*. If one were considering the uniting of these with a better known genus, there are many more reasons for placing them in *Sisymbrium* than in *Arabis*. However, there is no evidence that any species

<sup>1</sup> Contributions from the Dudley Herbarium 3: 241-265. 1943.

<sup>2</sup> Flora of Alaska and Yukon. Lunds, Univ. Arssk. 41: 870. 1945.

<sup>3</sup> Materials for a Flora of the Continental Northwest Territories of Canada. Sargentia 4: 43. 1943.

<sup>4</sup> Botany of Southwestern Yukon Adjacent to the Canol Road. Nat. Mus. Can. Bull. no. 121. 200. 1951.

of this alliance other than *H. mollis* and *H. virgata* were considered by either of the authors mentioned above.

In keeping *Arabidopsis mollis*, Hultén failed to take into account the natural relationships of this species. The implication of such a treatment, in the face of a monographic study showing that its relatives lie in a different direction, is that they too should be placed in *Arabidopsis*. But such a rearrangement, in my opinion, is not warranted on any grounds. Dr. Hultén might argue that he was merely following the Crucifer expert O. E. Schulz<sup>5</sup> in keeping *A. mollis* but it can be pointed out that Schulz also placed *Sisymbrium virgatum* in *Halimolobos*.<sup>6</sup> Both Porsild and I have emphasized the close similarity of *H. virgata* and *H. mollis*. Certainly in this instance Schulz was wrong in putting them in different genera. All the evidence I possess suggests that *H. mollis* and *H. virgata* are distinct species and that they are with their natural relatives in *Halimolobos*.—REED C. ROLLINS.

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PREVIOUSLY UNREPORTED PLANTS FROM MINNESOTA.—Three of my collections of *Carex* from Curtain Falls, Minnesota-Ontario boundary I have determined as *C. katahdinensis* Fern. These plants represent a fair sample of the species, if an exception can be made to the roughness of the peduncles. In this material from the interior, the peduncles are not consistently scabrous, and some are wholly smooth. The close relationship between this species and *C. conoidea* cannot be altogether ignored, especially as indicated by a microscopic study of the fruiting structures. *C. katahdinensis* is suggestive of stunted individuals of *C. conoidea*. However, the long bracts, the almost sessile staminate spike nestled in an aggregation of pistillate ones are obvious and constant, rendering a different look in the field from that of *C. conoidea*. Moreover, the short style-base of the ripe achenes as seen under magnification is also a differentiating structure. Collection no. 11674, Aug. 23, 1950, was made from the beach vegetation of Iron Lake at the end of the 160-rod portage from Crooked Lake above Curtain Falls. The strip of vegetation in white fine sand was within the zone of wave action. Scattered

<sup>5</sup> Bot. Jahrb. 66: 97. 1933.

<sup>6</sup> Das Pflanzenreich IV. 105: 290. 1924.



among *Oenothera perennis*, and *Eleocharis elliptica* were, though not numerous, the minute plants of *Carex katahdinensis*, in ripe fruit, but somewhat nibbled off by the ever hungry resort horse.

Realizing that the plants were far removed from the previously known geographical area of the species, I returned on June 19, 1951 for additional specimens (coll. no. 12487). Some plants were found again in another locality west of the sandy beach on Iron Lake, near the end, but not on the 116-rod portage from Crooked Lake below Curtain Falls. These plants (coll. no. 12562, June 23, 1951) were growing in fissures of granitic ledges along the shore of Iron Lake, at the rocky point overlooking the surging waters of the river below Curtain Falls. Like those from the sandy beach, these plants were luxuriant vegetatively, with immature fruits. Thus, the range of distribution of the species extends into the interior of the continent to Minnesota, from Newfoundland, Maine and Quebec.

*Cystopteris Dickieana* Sim, Lakela no. 5436, was determined by Mr. C. V. Morton, last September. For years, this fern collected from moss-mats of the shore rocks of Lake Superior at East Beaver Bay, Aug. 23, 1943, remained a problem. Its resemblance to *Cystopteris fragilis* was offset by spore characteristics which were suggestive of *Woodsia* affinities. A later collection, no. 13585, Aug. 12, 1951, also determined by Mr. Morton, was made from mossy ledges of the Great Palisade Head, overlooking Lake Superior on Highway 61, only five miles northeast of East Beaver Bay. Thus, the occurrence of the species on the coast of Lake Superior, Lake Co., Minn. adds another locality to the range of this long overlooked North American Fern.<sup>1</sup> To the adventive flora is herewith recorded *Lepidium campestre* (L.) R. Br. The plant was discovered in a tree plantation of the Quetico-Superior Wilderness Research Center, Basswood Lake, Lake Co., by Clifford Ahlgren, coll. no. 686, June 19, 1950. The plant is obviously an introduction, though it was found in the wilderness, far from its known range.—OLGA LAKELA, UNIVERSITY OF MINNESOTA, DULUTH BRANCH, DULUTH, MINNESOTA.

<sup>1</sup> Ahlston, A. H. G. An overlooked North American Fern. *Am. Fern. Journal* 41 (3): 76. 1951.

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